



**Virtual Meeting 3 of HSBI WG**

7 August 2025 10:00 – 13:00 (Pohnpei time)

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**HSBI DNA Sampling Guide**

**Voluntary HSBI Regional Guides**

**TOOLS FOR HIGH SEAS BOARDING AND INSPECTIONS**

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WCPFC-HSBIWG03-2025-02<sup>1</sup>

4 August 2025

Prepared by Australia

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<sup>1</sup> This is an updated version of WCPFC-HSBIWG02-2025-WP02 *Draft Voluntary Guide on use of DNA sampling in HSBI activities*. This version takes into account the discussions during HSBI WG2 meeting and some feedback submitted to Australia after the meeting.



# Voluntary HSBI Regional Guides

TOOLS FOR HIGH SEAS BOARDING AND INSPECTIONS

- Use of DNA sampling during HSBI
- Procedures for DNA sampling and processing to an evidentiary standard

## HSBI DNA Sampling Guide

### Document History

Version	Effective Date	Description of Revision	Prepared by	Reviewed by

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### PURPOSE STATEMENT

1. The purpose of this Guide is to provide guidance to Authorised inspectors conducting DNA Sampling as part of WCPFC High Seas Boarding and Inspections (HSBI<sup>1</sup>). For CCMs wishing to use DNA testing for HSBI, the development of this Guide also intends to:
  - Support the establishment of a robust DNA testing process by CCMs at the CCM's level to verify species identification of individual specimens in support of HSBI.

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<sup>1</sup> HSBI, refers to boarding and inspection and related activities conducted pursuant to CMM 2006-08 Western and Central Pacific Fisheries Commission Boarding and Inspection Procedures or any successor CMM.

- Assist CCMs in ensuring that DNA data are credible and admissible using appropriate methods and procedures throughout the entire DNA testing process;
  - Support the establishment of minimum practices at the CCM's level which are necessary to ensure that DNA sampling produce accurate, precise analytical findings, and findings are conveyed in an unbiased, objective manner; and
  - Provide guidance to CCMs on tools that can be used for gathering and preserving DNA samples during HSBIs and the minimum standards for DNA sampling and analysis.
2. This Guide sets out the minimum standards in the application of DNA sampling during a HSBI and the post analysis process, which includes:
    - DNA sampling
    - DNA sample handling, preservation, sealing and storage
    - DNA sample transfer/shipping
    - DNA testing and analysis in accordance with accredited procedures
    - transmission of DNA results
    - DNA sample retention and accessibility for flag CCM testing.
  3. The application of this Guide will be voluntary and apply to authorised HSBI activities within the WCPFC area of competence.
  4. This guide can be modified in response to new information, technical innovations, and perspectives. It is expected that this guide will continue to evolve as the field develops.

### Application of DNA sampling in WCPFC HSBI activities.

5. The aim of HSBIs is to check a vessel is operating in compliance with the WCPFC Convention and all applicable WCPFC Conservation and Management Measure (CMM) obligations.
6. Inspectors conducting HSBI activities can detect and confirm species on board at the time of inspection. A visual inspection of morphological characteristics may be all that is needed to obtain a species identification.
7. Genetics offers a powerful tool to complement the work of Inspectors conducting HSBI activities as it allows conclusive species identification.
8. Genetic analysis is the method of choice for species identification when identity cannot be determined on a purely morphological basis. Such as, the morphological characteristics are unfamiliar, similar, are absent.

9. Genetic analysis through DNA sampling of fish for identification can support investigations to verify a vessel's reported catch, through providing additional proof and the ability to confirm the identify the species in question. Examples include, to determine between:
  - Pacific and Southern bluefin tunas,
  - small-sized bigeye and yellowfin tunas, and
  - different bycatch species that are prohibited for retention.
10. DNA sampling results can be used to corroborate other forms of evidence such as vessel logbooks and photographs taken by the inspecting officer. This can be used to support risk assessments to prioritise the vessel for further investigation and prosecution as determined by the flag CCM.
11. The use of DNA sampling during HSBI activities, can assist the flag CCM with assessing compliance with vessel licensing and reporting obligations, including to:
  - confirm species identification
  - verify that only species which a vessel is authorised to catch are being retained and declared
  - verify catch reporting and catch log data
  - verify if protected species are being retained.

## HSBI DNA SAMPLING Minimum Standards

### *Methods of DNA sampling (not limited to)*

Laboratory-based analysis		Field-based analysis
Muscle Biopsy	Fin Biopsy	Other
DNA biopsy sampling involves taking a tissue sample from a single fish.	Tissue sample is collected from a single fish through cutting off a section of the fin.	Rapid field-based DNA test

### *EVIDENTIARY PROCEDURES for DNA Sampling*

12. The general principles and procedures for DNA sampling collection in fisheries monitoring and investigations:

#### *a) Witnesses and Photographing DNA sampling*

- DNA sampling should be documented using a recording device, including photographs and videos.
- DNA sampling should be conducted with witnesses' present (Authorised inspectors, master, crew, boarding party). Authorised inspectors should ideally work in pairs.
- The master of the vessel should sign the HSBI report which includes details of any DNA collection.

*b) Documentation and records of DNA sampling*

- The HSBI report should record DNA sampling information.
- The inspector should observe, inspect and record as much as possible, including but not limited to the following information:
  - o Date of the inspection
  - o Vessel name
  - o Location
  - o HSBI DNA sample collection details should include:
    - Sample identification number
    - Location of fish sampled (e.g. blast freezer, hold #)
    - Description (processed state of fish)
    - Comments

*c) Collecting and preserving DNA samples*

- DNA samples should be gathered, labelled, preserved and sealed at the sampling site.
- Each sample should be collected and marked separately with reference to a sample number, photographed and recorded by the Authorised inspector.
- Example sample label details:
  - o Date
  - o Sample reference number
  - o Vessel name
  - o Collector name
- Samples should be kept in a cool, dark environment, preferably a freezer when available.
- Sample labels should be waterproof and affixed directly to the sample vials or collection bags.

*d) Preventing cross-contamination of DNA samples*

- Protective measures are necessary to prevent cross-contamination of samples. The following should be considered for each individual sample:
  - o Using new, washed or unopened sampling tools
  - o Wear single-use disposable gloves,

*e) Secure transfer, storage, chain of custody of DNA samples to the testing laboratory*

From the beginning to the end of the DNA sampling process, it is crucial to be able to demonstrate every single step undertaken to ensure traceability and continuity of the sample. The integrity of DNA sample must be preserved as it passes from one person to another. It is a continuous record of the life of the DNA sample from the moment it was sampled to the moment it is analysed. Every step must be recorded and verified to ensure the DNA sample is not tampered with, changed or lost.

- The DNA samples should be stored in a sealed bag or envelope.
- Chain of custody record maintained.
- It is the Authorised inspector's responsibility to ensure chain of custody of the DNA sample.
- DNA samples should be sent to an accredited laboratory for testing as outlined in the CCM's DNA sampling procedures.

*f) Transmission of DNA sampling results to the flag CCM*

Timing of DNA analysis and results will vary depending on circumstances, such as:

- time for DNA sample to return to port
- time to facilitate arrangements to deliver of DNA sample to accredited laboratory
- time to deliver DNA sample to accredited laboratory
- time to analyse the DNA sample by accredited laboratory.

Once the DNA sample results are received by the relevant authority of the inspection vessel, they should be provided to the flag CCM within 5 business days.

## CCM DNA sampling and analysis procedures

13. CCMs wishing to use DNA testing for HSBI should share their DNA Sampling Procedures with the Secretariat for posting on the HSBI page on the WCPFC website.
14. The CCM's DNA Sampling Procedures should include:
  - DNA sampling method for HSBI activities
  - DNA sampling procedures for HSBI activities
  - Details of testing Laboratory and credentials and recognised standards, these could include:
    - o ISO 17025 / 9001 – *this accreditation supports laboratories in maintaining complex processes of testing and calibration to the highest standards and demonstrates to external clients that the laboratory outputs are valid and reliable.*
    - o Quality Management Systems (QMS)
    - o Society for Wildlife Forensic Science (SWFS) Standards and Guidelines for Wildlife Forensic Analysis – *the minimum standards and additional guidelines for wildlife forensic analysts in the sub discipline of DNA*
    - o Genetic reference database – *used for species assignment for WCPFC catch and compliance*
  - Sample retention and accessibility – tissue and DNA extracts should be retained, for up to [2 years] to allow for future testing by the flag CCM, if requested.

## Accessibility of DNA Sampling and Multi-language information

15. To assist the DNA sampling process during HSBI activities, it would be beneficial for the CCM's DNA sampling procedures to be translated into languages that are in use on fishing vessels and/or as pictographs to bridge any language barriers.
16. The following supporting documentation should be considered for translation by CCMs:

- HSBI multi-language cards
- DNA sampling procedures provided online.
- DNA sampling procedures given/shown to master of vessel prior to DNA sampling by HSBI Authorised inspectors.

17. In addition, flag CCMs should also consider providing information about DNA sampling procedures that may be used during HSBI Inspections to their fishing vessels in a language(s) used by their vessels.

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